

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application

Claims 1-6 have been cancelled

Claim 7 (new) A remote particle counter in a radar apparatus for remote measurement of a number and size distribution of suspended fine particles in the atmosphere comprising a control/analysis system that performs not only overall control of the system but also data measurement and analysis, a pulsed laser generator, laser beam emitting optics for transmitting a spread beam of laser light toward the atmosphere, scattered light collecting optics by which backward scattered light that occurred from fine particles upon illumination with laser light is collected on a detector, and a high-sensitivity two-dimensional photo detector having a fast gating capability,

wherein a target area in which a population of fine particles suspended over a certain area of the atmosphere at a certain altitude is illuminated with pulsed laser light of a wide beam spread which has been emitted from the laser generator controlled by the control/analysis system and which has passed through the laser beam emitting optics, and backward scattered light from the distributed atmosphere fine particles is collected by the scattered light collecting optics to be picked up by the high-sensitivity two-dimensional photo detector, which is controlled by the control/analysis system to measure the number and size distribution of the fine particles; and

wherein by controlling the direction of laser emission and the delay time from laser emission of the fast gating of the high-sensitivity two-dimensional photo detector, the number and size distribution of fine particles suspended in a cylindrical space of the atmosphere which is away from the position of laser emission is obtained.

Claim 8 (new) The remote particle counter according to claim 7, wherein the image of the scattered light from the individual faraway fine particles in the atmosphere as measured with the high-sensitivity two-dimensional photo detector having the fast gating capability looks like either a dense or sparse cloud of spots, which are analyzed to determine the number and size distribution of the fine particles within the limited space of the atmosphere, the latter being determined by the brightness or intensity of the spots.

Claim 9 (new) The remote particle counter according to claim 7, wherein the delay time in shutter closure by the fast gating capability of the high-sensitivity two-dimensional photo detector and the direction of laser emission are varied and controlled continuously and independently so as to provide information about the three-dimensional spatial distribution over a broad range of the number and size distribution of the fine particles in the atmosphere.

Claim 10 (new) The remote particle counter according to claim 7, wherein the temporal changes in the spatial distribution of the number and size distribution of the fine particles in the atmosphere as obtained by controlling the delay time and the direction of laser emission are captured and analyzed to obtain information about the wind velocity and direction of the atmosphere.